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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Present Application

Applicants : Kenneth H. Abbott et al.
Filed : June 27, 2001
For : MANAGING INTERACTIONS BETWEEN COMPUTER
USERS' CONTEXT MODELS
Docket No. : 294438020US4

Prior Application

Application No. : 09/724,894
Filed : November 28, 2000
Confirmation No. : 7810
Art Unit : 2152

Commissioner for Patents
Washington, DC 20231

PRELIMINARY AMENDMENT

Sir:

Please amend the application as follows:

In the Specification:

Please replace the paragraphs beginning at lines 4 and 11 of page 1 with the following paragraphs, respectively.

This application is a continuation of U.S. Patent Application No. 09/724,894, filed November 28, 2000 and currently pending. U.S. Patent Application

No. 09/724,894 is a continuation-in-part of U.S. Patent Application No. 09/216,193, entitled "METHOD AND SYSTEM FOR CONTROLLING PRESENTATION OF INFORMATION TO A USER BASED ON THE USER'S CONDITION" and filed December 18, 1998, and a continuation-in-part of U.S. Patent Application No. 09/464,659, entitled "STORING AND RECALLING INFORMATION TO AUGMENT HUMAN MEMORIES" and filed December 15, 1999, both of which are hereby incorporated by reference in their entirety.

U.S. Patent Application No. 09/724,894 also claims the benefit of provisional U.S. Patent Application No. 60/194,004 (Attorney Docket No. 294438020US), entitled "MANAGING INTERACTIONS BETWEEN COMPUTER USERS' CONTEXT MODELS" and filed April 2, 2000, and of provisional U.S. Patent Application No. 60/193,999 (Attorney Docket No. 294438008US) entitled "OBTAINING AND USING CONTEXTUAL DATA FOR SELECTED TASKS OR SCENARIOS, SUCH AS FOR A WEARABLE PERSONAL COMPUTER" and filed April 2, 2000, both of which are hereby incorporated by reference in their entirety.

In the Claims:

Please cancel claims 1-65.

Please add the following claims:

66. (New) A method for a remotely executing user characterization system to provide information about a current state of a user of a thin client wearable computer, the user characterization system modeling the current state with multiple state attributes and including state server modules (SSMs) to supply values for the state attributes, state client modules (SCMs) to process values for the state attributes, and an intermediary module to facilitate exchange of state attribute values, the method comprising:
under control of each SSM, gathering information about the current state of the user, generating values for at least one of the state attributes based on the gathered information, and sending the generated values to the intermediary module;

under control of each SCM, receiving values for at least one state attribute from the intermediary module and performing processing based on the received values;

under control of the intermediary module, facilitating exchange of values by, receiving the sent values for the state attributes from the SSMs and sending at least some of the received values to the SCMs; and

interacting with the thin client wearable computer in order to provide information about the user or to receive information about the user, so that the remote user characterization system can obtain and provide information about the current state of the user of the thin client wearable computer.

67. (New) The method of claim 66 wherein the thin client wearable computer includes an output device, and wherein the interacting with the thin client wearable computer includes sending information for presentation to the user on the output device.

68. (New) The method of claim 67 wherein the information to be sent for presentation to the user is generated by the processing of one of the SCMs, and wherein the sending of the information for presentation to the user on the output device is performed on behalf of that SCM.

69. (New) The method of claim 66 wherein the thin client wearable computer includes an input device, and wherein the interacting with the thin client wearable computer includes receiving information provided by the user via the input device.

70. (New) The method of claim 69 wherein the gathering of the information about the current state of the user by one of the SSMs includes obtaining the received information provided by the user via the input device.

71. (New) The method of claim 66 wherein the user characterization system executes on a computer remote from the thin client wearable computer, wherein the thin client wearable computer lacks resources accessible to the remote computer, and wherein the interacting with the thin client wearable computer includes receiving a request to access at least one of the resources on behalf of the thin client wearable computer and accessing those resources in response.

72. (New) The method of claim 71 wherein the at least one resources include processing capabilities of the remote computer, wherein the accessing of those resources includes using the processing capabilities on behalf of the thin client wearable computer, and including sending an indication of results to the thin client wearable computer.

73. (New) The method of claim 71 wherein the at least one resources are storage capabilities of the remote computer, and wherein the accessing of those resources includes sending information stored on the storage capabilities to the thin client wearable computer.

74. (New) The method of claim 71 wherein the at least one resources are storage capabilities of the remote computer, and wherein the accessing of those resources includes storing information received from the thin client wearable computer on the storage capabilities.

75. (New) The method of claim 71 wherein the remote computer has a sensor receiving information about the user of the thin client wearable computer, and wherein the gathering of the information about the current state of the user by at least one of the SSMs includes obtaining information from the sensor.

76. (New) The method of claim 71 wherein the remote computer has an output device that is perceivable by the user of the thin client wearable computer, and

wherein the performing of the processing based on the received values by at least one of the SCMs includes presenting information to the user on the output device.

77. (New) The method of claim 66 wherein the gathering of the information about the current state of the user by at least one of the SSMs includes obtaining information from at least one sensor that is part of the thin client wearable computer.

78. (New) The method of claim 66 wherein the performing of the processing based on the received values by at least one of the SCMs includes supplying information to at least one output device that is part of the thin client wearable computer.

79. (New) The method of claim 66 wherein the user characterization system further includes an additional module executing on the thin client wearable computer, and wherein the interacting with the thin client wearable computer includes interacting the additional executing module.

80. (New) The method of claim 66 wherein at least one of the SSMs executes on the thin client wearable computer and communicates with the intermediary module via wireless communication.

81. (New) The method of claim 66 wherein at least one of the SCMs executes on the thin client wearable computer and communicates with the intermediary module via wireless communication.

82. (New) The method of claim 66 wherein at least some of the SSMs are available to supply values for additional state attributes of a current state other than for the user, and wherein the intermediary module additionally sends values for the additional state attributes to SCMs.

83. (New) A method in a computer for providing information about a current state related to a thin client, the current state represented with multiple state attributes, the method comprising:

obtaining information that is related to the current state;

generating a value for each of at least one of the multiple state attributes of the represented current state based on the obtained information;

determining a module having an interest in at least one of the generated values; and

providing to the determined module the generated values in which the determined module is interested so that the determined module can act in accordance with the current state of the thin client.

84. (New) The method of claim 83 wherein the thin client is a remote system including at least one of an input device and an output device.

85. (New) The method of claim 84 wherein the obtaining of the information that is related to the current state includes communicating with the thin client via wireless communications in order to receive the information from the thin client.

86. (New) The method of claim 84 wherein the obtaining of the information that is related to the current state includes receiving information gathered by the input device of the thin client.

87. (New) The method of claim 84 wherein the obtaining of the information that is related to the current state includes receiving information gathered by a sensor of the thin client.

88. (New) The method of claim 84 wherein the obtaining of the information that is related to the current state includes receiving information from a

computing device distinct from the thin client that has access to information about the thin client.

89. (New) The method of claim 88 wherein the distinct computing device has access to information about the thin client based on sensing the information.

90. (New) The method of claim 88 wherein the distinct computing device has access to information about the thin client based on interactions with the thin client.

91. (New) The method of claim 84 wherein the obtaining of the information that is related to the current state includes interacting with a software module executing on the thin client.

92. (New) The method of claim 84 wherein the determined module is executing on the thin client.

93. (New) The method of claim 92 wherein the providing of the generated values to the determined module causes information to be presented on the output device of the thin client.

94. (New) The method of claim 84 wherein the thin client system lacks resources accessible to the computer, and including accessing at least one of the resources on behalf of the thin client.

95. (New) The method of claim 94 wherein the at least one resources include processing capabilities of the computer, and wherein the accessing of those resources includes using the processing capabilities on behalf of the thin client system.

96. (New) The method of claim 94 wherein the at least one resources are storage capabilities of the computer, and wherein the accessing of those resources includes storing information on or retrieving information from the storage capabilities.

97. (New) The method of claim 83 wherein the generating of the state attribute values based on the obtained information includes analyzing the obtained information.

98. (New) The method of claim 97 wherein the obtained information includes information from at least one input device of the thin client.

99. (New) The method of claim 97 wherein the obtained information includes information from at least one sensor device of the thin client.

100. (New) The method of claim 83 wherein the determining of the module having the interest in at least one of the generated values includes receiving a request from the determined module for those generated values.

101. (New) The method of claim 83 wherein the determining of the module having the interest in at least one of the generated values includes receiving a request from the determined module for values of the state attributes to which those generated values correspond.

102. (New) The method of claim 83 wherein the determining of the module having the interest in at least one of the generated values includes identifying a previously supplied indication of interest from the determined module.

103. (New) The method of claim 83 wherein the determined module is a characterization module that facilitates exchange of values of the state attributes representing the current state related to the thin client.

104. (New) The method of claim 83 wherein the determined module is a characterization module that models the current state related to the thin client.

105. (New) The method of claim 83 wherein the at least one state attributes represent information about a user of the thin client.

106. (New) The method of claim 105 wherein the represented information reflects a modeled mental state of the user.

107. (New) The method of claim 83 wherein the thin client is a computing device, and wherein the at least one state attributes represent information about the thin client.

108. (New) The method of claim 83 wherein the at least one state attributes represent information about a physical environment related to the thin client.

109. (New) The method of claim 83 wherein the at least one state attributes represent information about a cyber-environment related to the thin client.

110. (New) The method of claim 83 wherein the at least one state attributes represent a current prediction about a future state.

111. (New) The method of claim 83 wherein the obtained information is received from the thin client, and wherein security information must be provided to the thin client before the information is supplied from the thin client.

112. (New) The method of claim 83 wherein the obtained information is received from the thin client, and wherein security information must be received from the thin client before the obtained information is accepted from the thin client.

113. (New) The method of claim 83 wherein the determined module is part of the thin client, and wherein security information must be provided before the provided generated values are accepted by the thin client.

114. (New) The method of claim 83 wherein the determined module is part of the thin client, and wherein security information must be received from the thin client before the generated values are provided to the thin client.

115. (New) The method of claim 83 wherein the thin client is a software module executing on a remote computing device.

116. (New) A computer-readable medium whose contents cause a computing device to provide information about a state related to a thin client that is represented with multiple attributes, by performing a method comprising:

obtaining information that is related to the state;

generating a value for each of at least one of the multiple attributes of the represented state based on the obtained information;

determining a module having an interest in at least one of the generated values; and

providing to the determined module the generated values in which the determined module is interested.

117. (New) The computer-readable medium of claim 116 wherein the computer-readable medium is a memory of the computing device.

118. (New) The computer-readable medium of claim 116 wherein the computer-readable medium is a data transmission medium transmitting a generated data signal containing the contents.

119. (New) A computing device for providing information about a current state related to a thin client that is represented with multiple attributes, comprising:

an input module that is capable of obtaining information that is related to the current state;

an attribute value generator module that is capable of generating a value for each of at least one of the multiple attributes of the represented current state based on the obtained information; and

an attribute value provider module that is capable of determining a module having an interest in at least one of the generated values and of providing to the determined module the generated values in which the determined module is interested.

120. (New) The computing device of claim 119 wherein the input module, the attribute value generator module, and the attribute value provider module are executing in memory of the computing device.

121. (New) A computing device for providing information about a current state related to a thin client that is represented with multiple attributes, comprising:

means for obtaining information that is related to the current state;

means for generating a value for each of at least one of the multiple attributes of the represented current state based on the obtained information; and

means for determining a module having an interest in at least one of the generated values and providing to the determined module the generated values in which the determined module is interested so that the determined module can act in accordance with the current state of the thin client.

122. (New) A method in a computer for providing functionality to a remote thin client portable computing device based on a context related to the remote thin client that is modeled with multiple context attributes, the method comprising:

obtaining values of the context attributes from sources;

supplying the obtained values to clients having an interest in those values;

and

repeatedly, in response to requests received from the remote thin client, providing functionality as requested based on values of the context attributes.

123. (New) The method of claim 122 wherein the remote thin client includes an output device, and wherein the providing of the functionality as requested includes sending information for presentation to a user on the output device.

124. (New) The method of claim 122 wherein the remote thin client includes an input device, and wherein at least some of the requests received from the remote thin client are specified by a user via the input device.

125. (New) The method of claim 122 wherein the obtaining of the context attribute values includes communicating with the remote thin client via wireless communications in order to receive the values from the remote thin client.

126. (New) The method of claim 125 wherein the values received from the remote thin client are generated by a source module executing on the remote thin client.

127. (New) The method of claim 122 wherein the obtaining of the context attribute values includes communicating with the remote thin client in order to receive information that can be used in generating the values.

128. (New) The method of claim 122 wherein the providing of the functionality as requested includes accessing a resource accessible to the computer.

129. (New) The method of claim 128 wherein the remote thin client system lacks the accessible resource, and wherein the accessing of the resource is performed on behalf of the remote thin client.

130. (New) The method of claim 128 wherein the resource is processing capabilities of the computer, and wherein the accessing of the resource includes using the processing capabilities on behalf of the remote thin client.

131. (New) The method of claim 128 wherein the resource is storage capabilities of the computer, and wherein the accessing of the resource includes storing information on or retrieving information from the storage capabilities.

132. (New) The method of claim 122 wherein the obtaining of the context attribute values includes generating the values based on information related to the context of the thin client.

133. (New) The method of claim 122 wherein the context attributes represent information about a user of the remote thin client.

134. (New) The method of claim 133 wherein the represented information reflects a modeled mental state of the user.

135. (New) The method of claim 122 wherein the context attributes represent information about the remote thin client.

136. (New) The method of claim 122 wherein the context attributes represent information about a physical environment of a user of the remote thin client.

137. (New) The method of claim 122 wherein the context attributes represent information about a cyber-environment of a user of the remote thin client.

138. (New) The method of claim 122 wherein the context that is represented is a current context.

139. (New) A computer-readable medium containing instructions that when executed cause a computing device to provide functionality to a remote thin client portable computer based on a related context that is modeled with multiple context attributes, by performing a method comprising:

obtaining values of the context attributes from sources;

supplying the obtained values to clients having an interest in those values;

and

repeatedly, in response to requests received from the remote thin client, providing requested functionality based on values of the context attributes.

140. (New) A computer for providing functionality to a remote thin client portable computing device based on a context related to the remote thin client that is represented with multiple modeled attributes, comprising:

an attribute value exchange module that is capable of obtaining values of the attributes from sources and of supplying the obtained values to clients having an interest in those values; and

a functionality provider module that is capable of receiving a request from the remote thin client and providing functionality as requested based on values of the attributes.

141. (New) A method for a thin client computing device to assist a remote characterization module in modeling a current state of the thin client with multiple state attributes, the method comprising:

receiving an indication of information related to the current state;

sending to the remote characterization module the indicated information related to the current state;

receiving from the remote characterization module an instruction that is based on one or more values of the modeled state attributes; and

performing the instruction in accordance with the current state.

142. (New) The method of claim 141 wherein the sending of the indicated information to the remote characterization module is in response to a received request from the remote characterization module.

143. (New) The method of claim 141 wherein the indicated information is received from an input device of the thin client.

144. (New) The method of claim 141 wherein the indicated information is received from a sensor of the thin client.

145. (New) The method of claim 141 wherein the received instruction is to present information to a user of the thin client via an output device of the thin client.

146. (New) The method of claim 145 wherein the information to be presented includes at least one value of a modeled state attribute.

147. (New) The method of claim 141 including sending a request to the remote characterization module that specified functionality be provided.

148. (New) The method of claim 147 including receiving provision of the specified functionality in response.

149. (New) The method of claim 147 wherein the specified functionality includes providing access to a resource which the thin client lacks.

150. (New) A method in a computer for modeling a current state related to a remote client device having limited resources, the current state represented with multiple state attributes, the method comprising:

obtaining information that is related to the current state;

generating a value for each of at least one of the multiple state attributes of the represented current state based on the obtained information;

determining a module having an interest in at least one of the generated values; and

providing to the determined module the generated values in which the determined module is interested so that the determined module can act in accordance with the current state of the remote client device.

151. (New) The method of claim 150 wherein the remote client device includes only minimal processing capabilities.

152. (New) The method of claim 150 wherein the remote client device does not include storage capabilities.

153. (New) The method of claim 150 wherein the obtaining of the information that is related to the current state includes receiving information gathered by an input device of the remote client device.

154. (New) The method of claim 150 wherein the obtaining of the information that is related to the current state includes receiving information gathered by a sensor of the remote client device.

155. (New) The method of claim 150 wherein the providing of the generated values to the determined module causes information to be presented on an output device of the remote client device.

156. (New) The method of claim 150 wherein the computer has access to resources that are not among the limited resources of the remote client device, and including accessing at least one of the accessible resources on behalf of the remote client device.

157. (New) The method of claim 156 wherein the at least one resources include processing capabilities of the computer, and wherein the accessing of those resources includes using the processing capabilities on behalf of the remote client device.

158. (New) The method of claim 156 wherein the at least one resources are storage capabilities of the computer, and wherein the accessing of those resources includes storing information on or retrieving information from the storage capabilities.

159. (New) The method of claim 150 wherein the at least one state attributes represent information about a user of the remote client device.

160. (New) The method of claim 150 wherein the at least one state attributes represent information about the remote client device.

161. (New) A method in a computer for providing functionality to a remote client device having limited resources based on a context related to the remote client device, the context modeled with multiple context attributes, the method comprising:

obtaining values of the context attributes from sources;

supplying the obtained values to clients having an interest in those values;

and

repeatedly, in response to requests received from the remote client device, providing functionality as requested based on values of the context attributes.

162. (New) The method of claim 161 wherein the remote client device includes only minimal processing capabilities.

163. (New) The method of claim 161 wherein the remote client device does not include storage capabilities.

164. (New) The method of claim 161 wherein the computer has access to resources that are not among the limited resources of the remote client device, and including accessing at least one of the accessible resources on behalf of the remote client device.

165. (New) The method of claim 164 wherein the at least one resources include processing capabilities of the computer, and wherein the accessing of those resources includes using the processing capabilities on behalf of the remote client device.

166. (New) The method of claim 164 wherein the at least one resources are storage capabilities of the computer, and wherein the accessing of those resources includes storing information on or retrieving information from the storage capabilities.

167. (New) The method of claim 164 wherein the providing of the requested functionality includes the accessing of those resources.

168. (New) The method of claim 161 wherein the at least one state attributes represent information about a user of the remote client device.

169. (New) The method of claim 161 wherein the at least one state attributes represent information about the remote client device.

170. (New) The method of claim 161 wherein the remote client device includes an output device, and wherein the providing of the functionality as requested includes sending information for presentation to a user on the output device.

171. (New) The method of claim 161 wherein the remote client device includes an input device, and wherein at least some of the requests received from the remote client device are specified by a user via the input device.

172. (New) The method of claim 161 wherein the obtaining of the context attribute values includes communicating with the remote client device via wireless communications in order to receive the values from the remote client device.

REMARKS

Applicants have added claims 66-172 in order to clarify the subject matter of their invention, and have canceled claims 1-65. Thus, claims 66-172 are now pending.

Applicants respectfully request consideration of this application and its early allowance.

Respectfully submitted,
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APPENDIX – SPECIFICATION
MARKED TO SHOW CHANGES

Paragraphs beginning at Page 1, lines 4 and 11, respectively:

This application is a continuation of U.S. Patent Application No. 09/724,894, filed November 28, 2000 and currently pending. U.S. Patent Application No. 09/724,894 [This application] is a continuation-in-part of U.S. Patent Application No. 09/216,193, entitled “METHOD AND SYSTEM FOR CONTROLLING PRESENTATION OF INFORMATION TO A USER BASED ON THE USER’S CONDITION” and filed December 18, 1998, and a continuation-in-part of U.S. Patent Application No. 09/464,659, entitled “STORING AND RECALLING INFORMATION TO AUGMENT HUMAN MEMORIES” and filed December 15, 1999, both of which [. Both of these applications] are hereby incorporated by reference in their entirety.

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